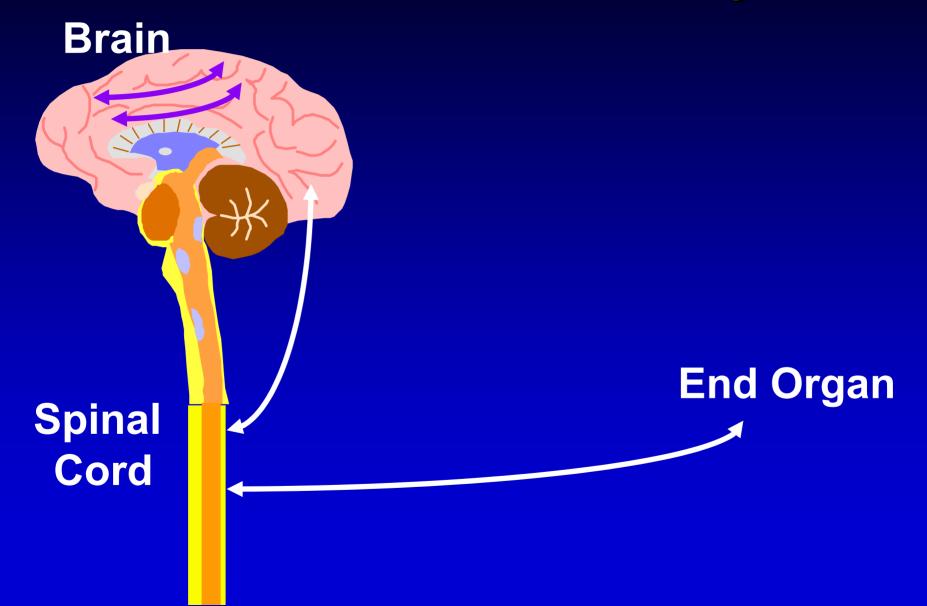
# PSYCHOTROPICS MADE SIMPLE Part I

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#### **OVERVIEW**

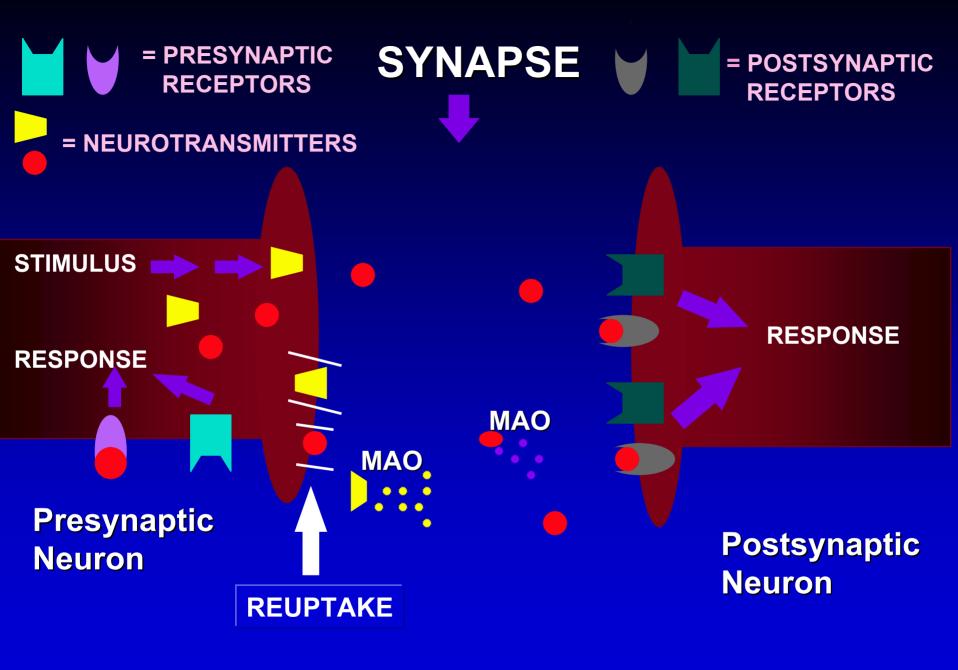
- Introductory Concepts
- Drug Class Reviews
  - Antipsychotics
  - Antidepressants
  - Mood Stabilizers
  - Antianxiety Agents
  - Hypnotics

## **Basic Neuroanatomy**



#### **NEUROPHYSIOLOGY 101**

- Common Neurotransmitters
  - Acetylcholine (ACh)
  - Norepinephrine (NE)
  - Epinephrine (Epi)
  - Dopamine (DA)
  - Serotonin (5HT)



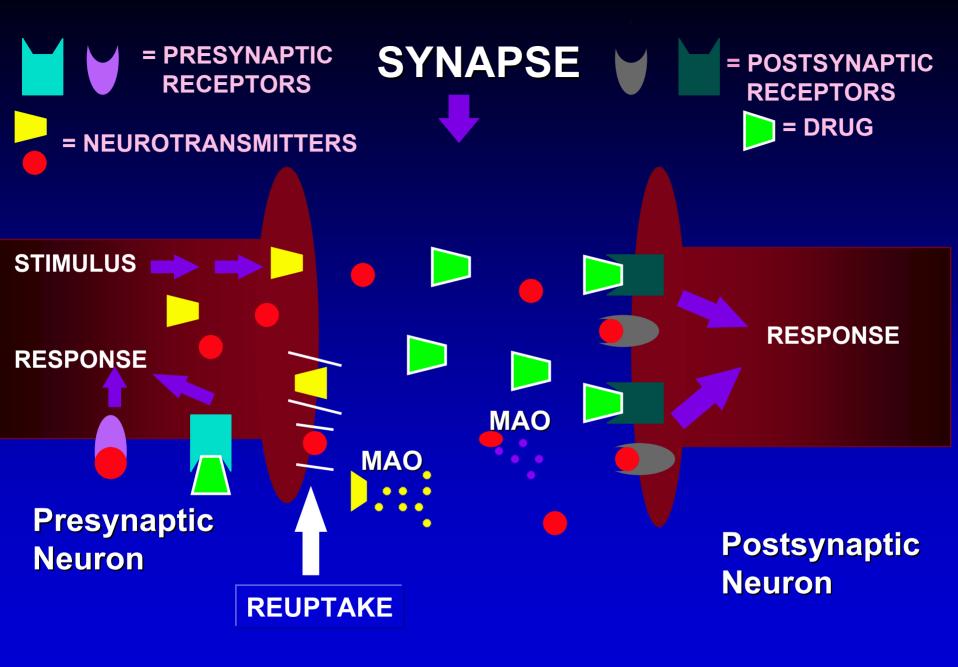
#### RECEPTOR PHARMACOLOGY

#### AGONIST

drug that mimics the effects of the neurotransmitter

#### ANTAGONIST

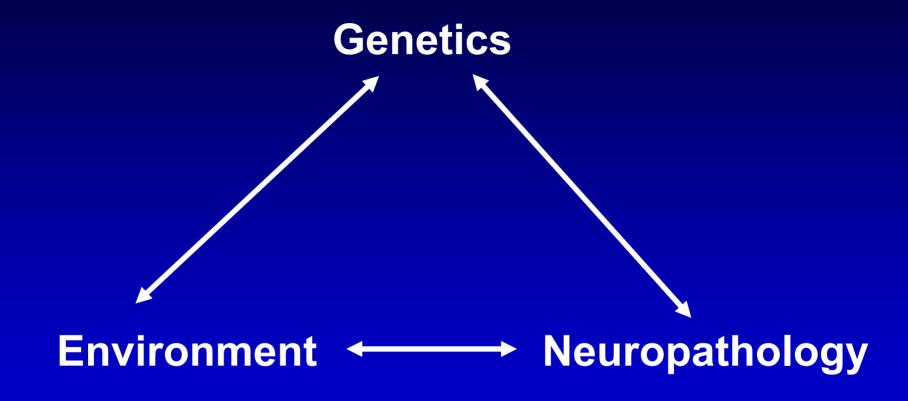
- drug that blocks the effects of the neurotransmitter
- EFFECT (excitatory/inhibitory)
  - dependant on on what the neurotransmitter/drug does



## Therapeutic Effects of Psychotropic Medication

- Curative versus preventative effects
  - psychotropic medications relieve symptoms
  - help prevent the return of symptoms
    - longer symptom free intervals between episodes
    - fewer symptoms during future episodes
    - relief of symptoms between episodes.
  - adjunctive therapy in the treatment of mental disorders
  - not to be relied upon as sole treatment

### **Mental Illness**





## Therapeutic Effects of Psychotropic Medication

- Onset of Effect
  - Early
    - generally due to side effects
  - Delayed
    - Specific Effects weeks to months

### Long-term Maintenance Treatment

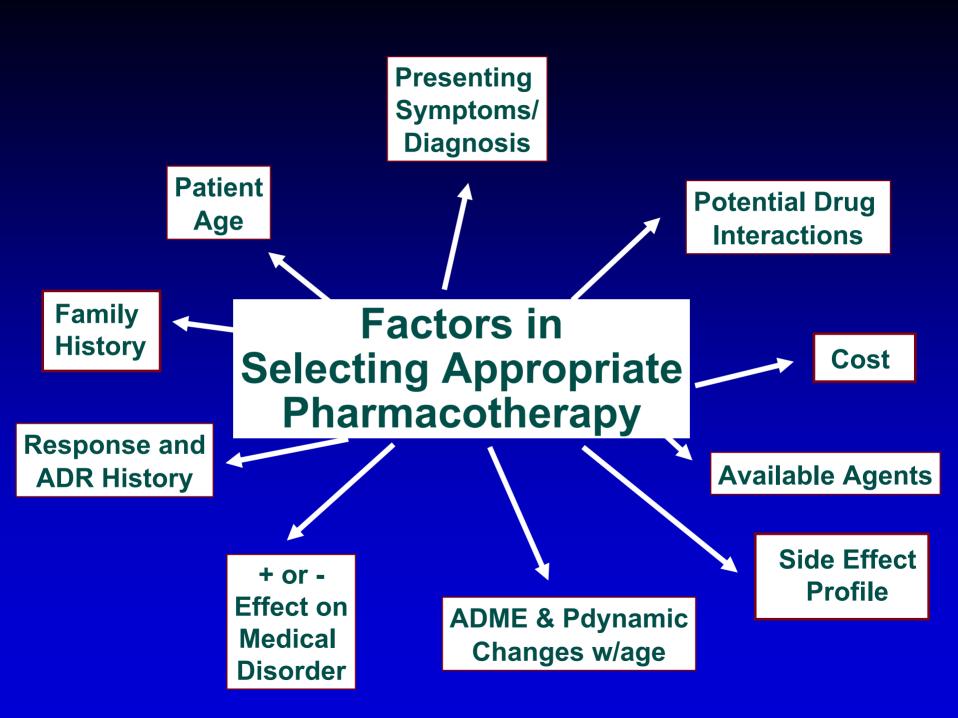
- 1. Not necessary for all patients
- 2. Not predictable which patients require longterm therapy
- 3. Long-term therapy is used for those patients who respond and have recurrent episodes
- 4. First episode 6 months
- 5. Consider long-term side effects in decision
- 6. Taper the dose to the minimal therapeutic dose
- 7. Consolidate doses to improve adherence
- 8. Routine follow up is imperative

#### **Noncompliance**

- Don't believe they are ill
- Adverse effects of medication
- Not satisfied with the treatment provider
- Mis- or not informed
- Generally not related to gender, socioeconomic, or level of education

# Determining Need for Medication

- Based on:
  - treatment responsive symptoms
    - Type of symptoms
    - Severity
    - Impact on function
  - dangerousness
  - patient preference





# Target symptoms for antipsychotic treatment

#### **Positive Symptoms**

agitation/anxiety/hostility associational disturbances delusions/illusions hallucinations ideas of reference paranoia insomnia

#### **Negative Symptoms**

alogia
amotivation
anhedonia
inappropriate affect
poor grooming/hygiene
poverty of speech
/mutism
poor social skills
/ social withdrawal

#### **Antipsychotic Medications**

Typical/Conventional Antipsychotics

Low potency

**High potency** 

Very high potency

**Depot Antipsychotics** 

**Prolixin-D®** 

Haldol-D®

**Atypical Antipsychotics** 

| TRADE NAME        | GENERIC NAME    | DOSAGE RANGE    | EQUIV DOSE |
|-------------------|-----------------|-----------------|------------|
| LOW POTENCY       |                 |                 |            |
| Thorazine         | Chlorpromazine  | 200-1600 mg/day | 100 mg     |
| Mellaril          | Thioridazine    | 200-800 mg/day  | 100 mg     |
| Serentil          | Mesoridazine    | 100-400 mg/day  | 50 mg      |
| HIGH POTENCY      |                 |                 |            |
| Moban             | Molindone       | 40-250 mg/day   | 25 mg      |
| Loxitane          | Loxapine        | 40-225 mg/day   | 10-15 mg   |
| Trilafon          | Perphenazine    | 12-64 mg/day    | 8 mg       |
| Stelazine         | Trifluoperazine | 10-60 mg/day    | 5 mg       |
| Navane            | Thiothixene     | 10-120 mg/day   | 5 mg       |
| Orap              | Pimozide        | 1-12 mg/day     | 20 mg      |
| VERY HIGH POTENCY |                 |                 |            |
| Haldol            | Haloperidol     | 4-40 mg/day     | 2-5 mg     |
| Prolixin          | Fluphenazine    | 2-60 mg/day     | 2-5 mg     |

| TRADE NAME              | GENERIC NAME                | DOSAGE RANGE              | EQUIV DOSE |
|-------------------------|-----------------------------|---------------------------|------------|
| DEPOT ANTIPSYCHOTICS    |                             |                           |            |
| Haldol-D                | Haloperidol<br>Decanoate    | 100-450<br>mg/month       | n/a        |
| Prolixin-D              | Fluphenazine<br>Decanoate   | 6.25 - 75 mg/2-3<br>weeks | n/a        |
| Risperdal Consta        | Risperidone<br>Microspheres | n/a                       | n/a        |
| ATYPICAL ANTIPSYCHOTICS |                             |                           |            |
| Clozaril                | Clozapine                   | 200-900 mg/day            | n/a        |
| Risperdal               | Risperidone                 | 0.25-6 mg/day             | n/a        |
| Zyprexa                 | Olanzapine                  | 5-20 mg/day               | n/a        |
| Geodon                  | Ziprasidone                 | 40-160 mg/day             | n/a        |
| Seroquel                | Quetiapine                  | 250-750 mg/day            | n/a        |
| Abilify                 | Aripiprazole                | 10 – 30 mg/day            | n/a        |

# Adverse Effects of Antipsychotics

- Drowsiness
  - usually resolves within 2 weeks
- Extrapyramidal Side Effects (EPS)
  - Dystonia
  - Pseuoparkinsonism
  - Akathisia
  - Tardive Dyskinesia
    - need routine evaluation using AIMS or DISCUS

#### **Medications Used to Treat EPS**

| TRADE<br>NAME | GENERIC NAME     | DRUG<br>T <sub>1/2</sub> (h) | ABUSE<br>POTENTIAL | DYSTONIA<br>(mg/day) | PSEUDO-<br>PARKINSON<br>(mg/day) | AKATHISA<br>(mg/day) |
|---------------|------------------|------------------------------|--------------------|----------------------|----------------------------------|----------------------|
| Benadryl      | Diphenhydramine* | 2-8                          | Low                | 25-50 IM             | 50-200                           | -                    |
| Cogentin      | Benztropine*     | 6-48                         | Moderate           | 1-2 IM               | 4-10                             | -                    |
| Ativan        | Lorazepam*       | 10-20                        | High               | 0.5-10               | -                                | 0.5-10               |
| Artane        | Trihexyphenidyl  | 3-4                          | High               | -                    | 4-20                             | -                    |
| Akineton      | Biperiden        | -                            | High               | -                    | 4-20                             | -                    |
| Inderal       | Propranolol      | 4-6                          | Low                | -                    | -                                | 20-80                |
| Symmetrel     | Amantadine       | 10-28                        | Low                | -                    | 100-400                          | -                    |

<sup>\* -</sup> available in intramuscular dosage form

# Adverse Effects of Antipsychotics

- Anticholinergic side effects
  - dry mouth
  - blurred vision
  - Constipation
  - urinary retention
  - decreased sweating
  - tolerance usually develops to these side effects over 1-2 months.
- Cardiovascular side effects
  - postural hypotension
  - arrhythmias/palpitations

#### **ANTIPSYCHOTIC SIDE EFFECT PROFILE**

| DRUG      | SEDATION       | E.P.S.       | ANTICHOL. | CARDIOV.                   |
|-----------|----------------|--------------|-----------|----------------------------|
| Thorazine | High           | Moderate     | Mod       | High                       |
| Mellaril  | High           | Moderate     | High      | High – QTc<br>Prolongation |
| Loxitane  | Moderate       | High         | Low       | Moderate                   |
| Navane    | Low            | High         | Low       | Low                        |
| Stelazine | Low            | High         | Low       | Low                        |
| Trilafon  | Moderate       | High         | Mod       | Moderate                   |
| Serentil  | Moderate       | High         | Mod       | Moderate                   |
| Moban     | Very Low       | High         | Low       | Low                        |
| Prolixin  | Low            | High         | Low       | Low                        |
| Haldol    | Very Low       | Very High    | Low       | Low                        |
| Clozaril  | High initially | Very Low     | High      | Low                        |
| Risperdal | Moderate       | Low-Moderate | Very Low  | Low                        |
| Seroquel  | High           | Very Low     | Low       | High                       |
| Zyprexa   | High initially | Very low     | Moderate  | Moderate                   |
| Geodon    | Low            | Low-Moderate | Low       | High – QTc<br>Prolongation |

#### **Clozaril - Adverse Effects**

- Weight Gain
- Sedation
- Hypersalivation
- Constipation
- Tachycardia
- Orthostatic hypotension
- Seizures
- Agranulocytosis

### Risperdal - Adverse Effects

- Dose-related extrapyramidal effects
- Akathisia
- Sedation/insomnia/anxiety
- Orthostatic hypotension
- Nausea/vomiting
- Prolactin increases
- Tardive Dyskinesia <1%</li>

### **Zyprexa - Adverse Effects**

- Somnolence
- Orthostatic hypotension/dizziness
- Akathisia
- Weight gain
- Dose-related increases in EPS and prolactin
- Elevated hepatic transaminase

### Seroquel - Adverse Effects

- Drowsiness
- Agitation
- Weight Gain
- Constipation
- Dry Mouth
- Orthostatic hypotension
- Mild increase in hepatic transaminase

#### **Geodon – Adverse Effects**

- Somnolence
- Headache
- Nausea
- EPS
- QTc prolongation

### Abilify – Adverse Effects

- Headache
- Nausea/Vomiting
- Constipation
- Insomnia
- Anxiety
- Akathisia

#### What's Next?

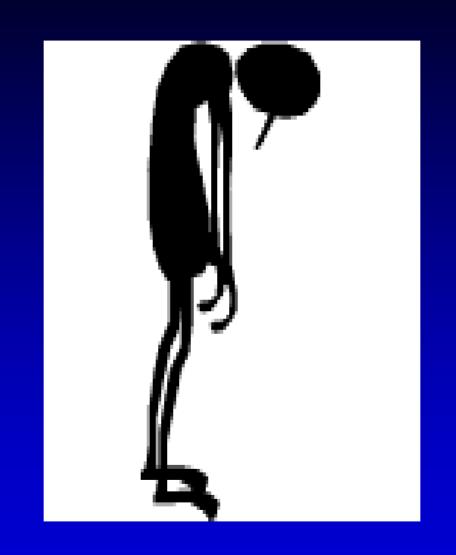
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# PSYCHOTROPICS MADE SIMPLE Part II

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#### **OVERVIEW**

- Introductory Concepts
- Drug Class Reviews
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  - Antianxiety Agents
  - Hypnotics



# Target Symptoms for Antidepressant Treatment

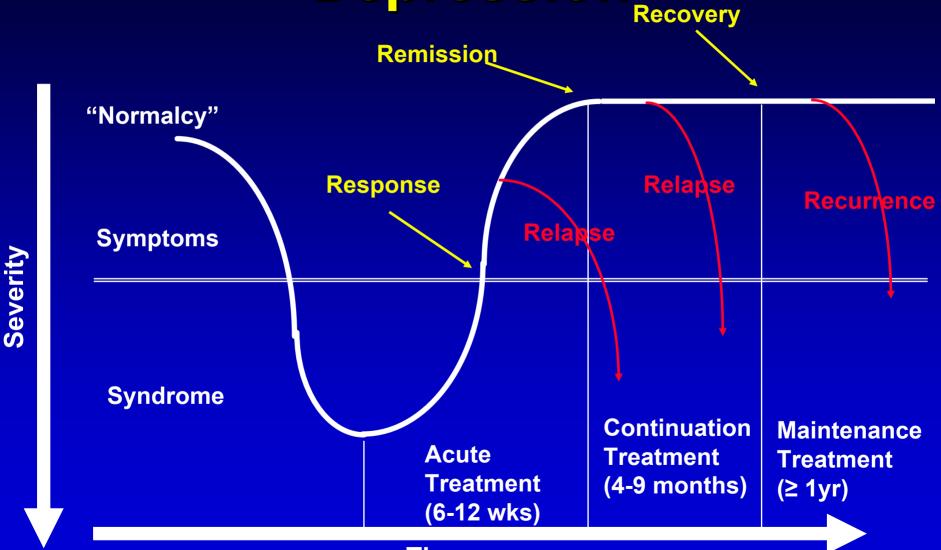
#### •mood/feeling

- -sadness
- -irritability
- -pessimism
- -self-reproach
- -anxiety
- suicidal thoughts
- hopelessness
- •guilt
- no enjoyment

#### vegetative signs

- -slowed movement
- -slowed thinking
- –poor memory and concentration
- -fatigue
- -constipation
- -decreased sex drive
- -anorexia
- -weight change
- -insomnia

# Phases of Treatment for Depression

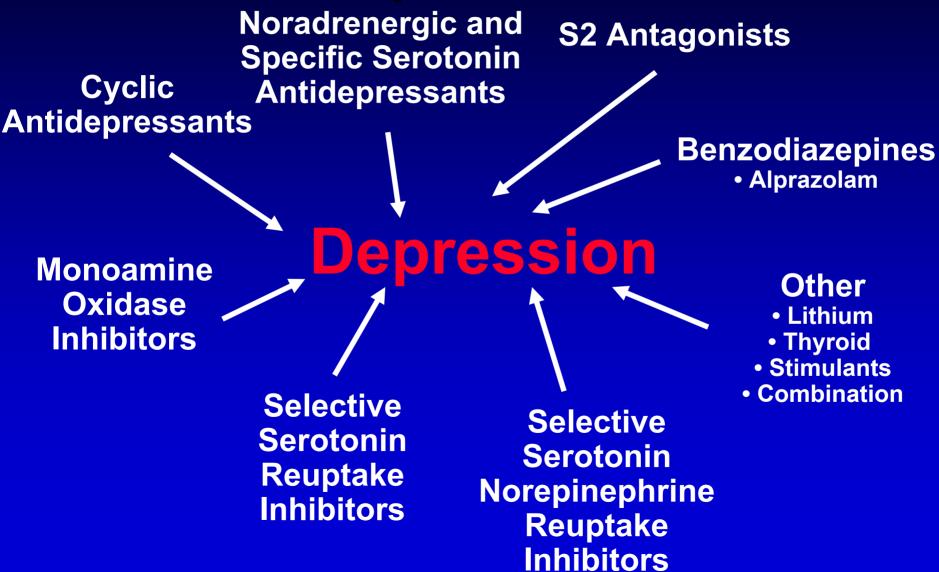


**Time** 

### Survival

- Recurrence rate of 30% in 3 years at full dose, 70% at half dose
- 50-70% of patients will relapse over 1 year period without maintenance treatment
- Risk of relapse continues to increase over time
- Risk of relapse significantly reduced with maintenance therapy - 80-90% remain well during first year of maintenance therapy
- Psychotherapy does not improve survival significantly over medication management

# Treatment Options for Depression



## **Antidepressant Side Effects**



- Nausea
- Diarrhea
- Headache
- Nervousness
- Insomnia
- Sexual Dysfunction

- Drowsiness
- Dry Mouth
- Blurred Vision
- Constipation
- Hypotension
- Weight Gain
- Cardiac Effects
- Urinary Retention
- Sexual Dysfunction
- Memory Impairment

- Dizziness
- Weight Gain

Hypotension

- Insomnia
- Cardiac Effects
- Constipation
- Sexual Dysfunction
- Palpitations
- Hypertensive Crisis

## **Antidepressant Side Effects**

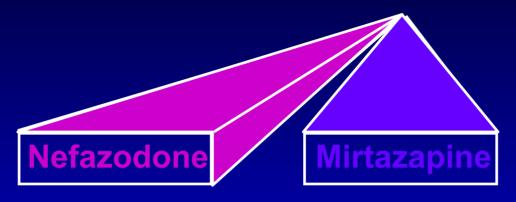


- Nausea
- Diarrhea
- Headache
- Hypertension
- Nervousness
- Insomnia
- Sexual Dysfunction

- Insomnia
- Seizures
- Weight Gain
- Cardiac Effects

- Hypotension
- Dizziness
- Weight Gain
- Constipation
- Sexual Dysfunction
- Memory Impairment

# **Antidepressant Side Effects**

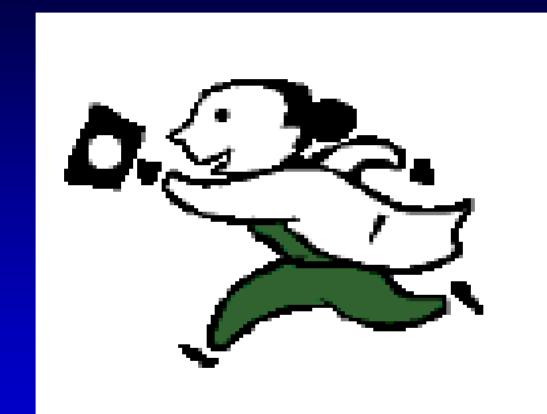


- Constipation
- Lightheadedness
- Postural hypotension
- Headache
- Dry mouth
- Nausea
- Somnolence
- Confusion
- Visual changes
- Sexual dysfunction

- Sedation
- Nausea
- Weight gain
- Dizziness
- Dry mouth
- Constipation
- Visual changes
- Pruritis/rash
- Sexual dysfunction

# ANTIDEPRESSANT SIDE EFFECT PROFILE

- GASTROINTESTINAL SIDE EFFECTS
- SEXUAL DYSFUNCTION
- OVERDOSE



# Target Symptoms for Mania

#### -Mood disorder

irritability
expansive
manipulative
labile

#### -Hyperactivity

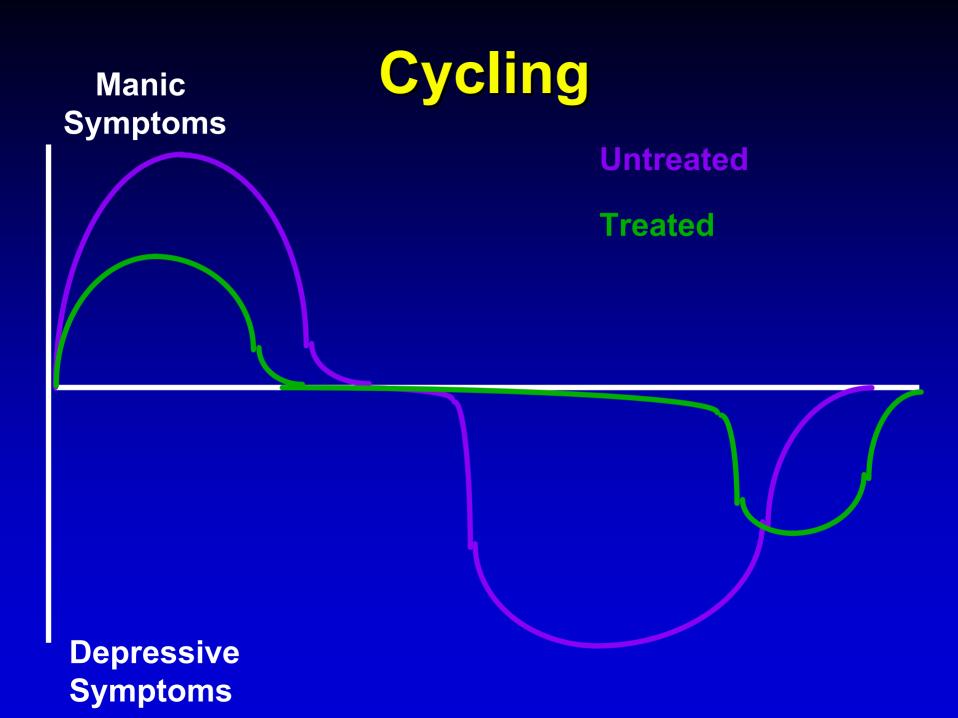
sleep disturbance
pressured speech
increased motor activity
assaultive/threatening
distractibility
hypersexuality

#### -Delusions

sexual
persecutory
religious
grandiose

#### -Schizophreniform

loose associations hallucinations



### **MOOD STABILIZERS**

LITHIUM- ESKALITH, LITHOBID, ETC.

VALPROIC ACID - DEPAKOTE,
DEPAKENE

**CARBAMAZEPINE - TEGRETOL** 

# Side Effects of Lithium Therapy

### 1. Early side effects

- gastrointestinal
- fine hand tremor
- fatigue, muscle weakness, dazed feeling
- increased thirst and frequent urination

#### 2. Persistent side effects

- fine hand tremor
- increased thirst and urination

# Side Effects of Lithium Therapy

- 3. Late side effects: moderate toxicity.
  Lithium ≥1.5 mEq/l
  - more severe hand tremor, coarsening of the tremor
  - reappearance of GI symptoms
  - confusion
  - hypothyroidism
  - ataxia
  - slurred speech

# Side Effects of Lithium Therapy

- 4. Severe toxicity: overdose effects Lithium ≥2.5 mEq/lr
  - Seizures
  - Coma
  - Cardiovascular collapse
  - Death

# Depakote Side Effects

- Abdominal cramps
- Nausea/vomiting
- Weight gain
- Sedation/drowsiness
- Transient increase in liver enzymes
- Alopecia less than 1%
- Thrombocytopenia

# Carbamazepine Side Effects

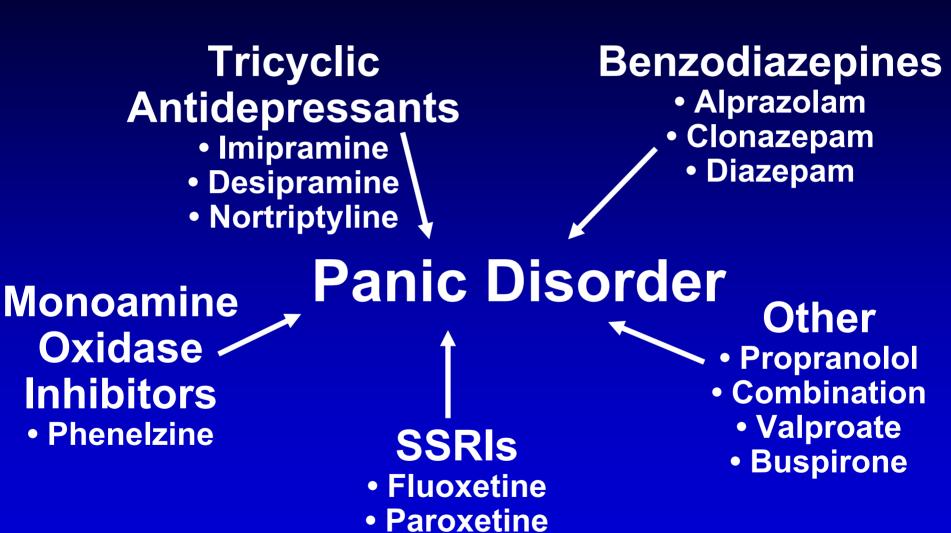
- Skin rash
- Sedation/fatigue
- Dizziness
- Nausea/vomiting/diarrhea
- Blurred vision
- Hyponatremia
- Blood dyscrasias

# Miscellaneous Agents

- Gabapentin (Neurontin)
- Lamotrigine (Lamictal)
- Oxcarbazepine (Trileptal)
- Topirimate (Topamax)



### Treatment Options for Panic Disorder



Fluvoxamine

# **Antianxiety Agents**

- A. Agents and Actions
  - Benzodiazepines
    - long-acting (t1/2 > 40 hours)
    - medium-acting (t1/2 10-40 hours)

- Non-benzodiazepine
  - buspirone (BuSpar)

| BZDP Agent       | Dose Range(mg/d) | T1/2 (hrs)/metab | Active Metabolite                            |
|------------------|------------------|------------------|--|
| alprazolam       | 0.5-10           | 9-20             | OH-alprazolam                                |
| chlordiazepoxide | e 5-200          | 4-29/28-100      | DMD, oxazepam, DMC                           |
| clonazepam       | 0.5-6            | 19-60            |  |
| chlorazepate     | 15-60            | 1-120            | DMD  |
| diazepam         | 2-40             | 14-70/30-200     | DMD, oxazepam,<br>temazepam<br>3-OH-diazepam |
| estazolam        | 0.5-2.0          | 8-24             |  |
| flurazepam       | 15-30            | 3/40-250         | N-desalkylflurazepam,                        |
|                  |                  |                  | OH-ethylflurazepam                           |
| halazepam        | 80-160           | 14/30-96         | DMD, 3-OH-halazepam                          |
| lorazepam        | 2-6              | 8-24             |  |
| oxazepam         | 30-120           | 3-25             |  |
| prazepam         | 20-60            | 30-100           | DMD, oxazepam,<br>desalkylprazepam           |
| quazepam         | 7.5-30           | 15-40/39-120     | 2-oxoquazepam,<br>desalkylflurazepam         |
| temazepam        | 15-30            | 3-25             |  |
| triazolam        | 0.125-0.5        | 1.5-5            | 7-a-OH metabolite                            |

# **Target Symptoms for Anxiety**

- Motor Tension
  - Trembling, twitching or feeling shaky
  - Restlessness

- Muscle Tension, aches or soreness
- Easy fatigability

- Autonomic Hyperactivity
  - Shortness of breath
  - Sweating, cold clammy hands
  - Palpitations or tachycardia
  - Dry mouth

- Dizziness or lightheadedness
- Frequent urination/ urgency
- Nausea, diarrhea, GI distress
- "Lump in throat"

### Target Symptoms in Anxiety (continued)

- Vigilance and Scanning
  - Feeling keyed up or on edge
  - Insomnia
  - Easy to startle
  - Difficulty concentrating
  - Irritability
- Panic (in addition to above)
  - Choking

- Fear of going crazy
- Paresthesias
- Chest pain/discomfort

- Fear of dying

### SIDE EFFECTS

- Benzodiazepine agents
  - long-acting versus short-acting
  - common effects

**Drowsiness** Sedation

Blurred vision Ataxia

**Excitement** Disorientation

**Aggression** Confusion

**Psychomotor impairment** 

- discontinuation: rebound, relapse, recurrence and withdrawal
- abuse, dependence, addiction

### SIDE EFFECTS

- Buspirone (Buspar)
  - Common side effects
    - Sedation
    - Insomnia
    - Agitation
    - Headache
    - Weakness
    - Gastrointestinal
    - Dizziness
  - Abuse potential



# **Sleep Disorders**

- Hypersomnia
- Insomnia
- Narcolepsy
- Nocturnal Myoclonus
- Restless Legs Syndrome
- Sleep Apnea

## **Hypersomnia**

- Excessive daytime sleepiness
- Prevalence is approximately 7% of those with a sleep disorder
- "Sleep drunkenness"
- Cataplexy and sleep paralysis are absent

### Insomnia

- Difficulty falling asleep, maintaining sleep, or early final awakening
- Can occur at any age
- Approximately 30-35% of the general population is affected by insomnia at some point

## Sleep Apnea

- Intervals of arrested respiration lasting 10 seconds or more, followed by loud gasping, choking, or snoring.
- Causes interrupted sleep and possibly daytime fatigue or frank daytime sleepiness.
- Polysomnogram confirms diagnosis

# Other Sleep Disorders

- Narcolepsy
- Nocturnal Myoclonus
- Restless Legs Syndrome

# **Tips for Quality Sleep**

#### Do:

Explore relaxation techniques
Create a soothing bedtime routine
Know your medicines
Resolve dilemmas before retiring
Remove distractions from the room
Develop a consistent sleep schedule

#### Don't:

Consume caffeine after mid-day
Have a nightcap
Stay in bed if you cannot sleep
Smoke during the evening hours
Nap during the day
Use excessive sleep agents
Exercise before bedtime
Get into bed and complete activities

| TRADE<br>NAME | GENERIC NAME    | CONTROL<br>SCHEDULE | DRUG T <sub>1/2</sub> (hours) | SEDATIVE<br>DOSAGE<br>RANGE<br>(mg/day) | LENGTH OF<br>THERAPY<br>(days) |
|---------------|-----------------|---------------------|-------------------------------|---|--------------------------------|
| Benadryl      | diphenhydramine | No                  | 2-8                           | 25-50                                   | n/a                            |
| Noctec        | chloral hydrate | C-IV                | 8-11                          | 250-2000                                | 2-3                            |
| Ativan        | lorazepam       | C-IV                | 10-20                         | 0.5-10                                  | n/a                            |
| ProSom        | estazolam       | C-IV                | 10-24                         | 1-2                                     | n/a                            |
| Dalmane       | flurazepam      | C-IV                | >100                          | 15-60                                   | n/a                            |
| Restoril      | temazepam       | C-IV                | 10-40                         | 15-30                                   | n/a                            |
| Halcion       | triazolam       | C-IV                | 2                             | 0.125-0.5                               | n/a                            |
| Doral         | quazepam        | C-IV                | >100                          | 7.5-015                                 | n/a                            |
| Sonata        | Zaleplon        | C-IV                | 1                             | 5-20 mg                                 | 30 days                        |
| Ambien        | zolpidem        | C-IV                | 2-2.6                         | 5-20                                    | 5-10                           |

## In Summary...

Introduction to psychopharmacy **Schizophrenia Depression** Bipolar disorder **Anxiety disorders** Sleep disorders Don't forget....

# Medications for Medical Conditions

- Thyroid, decongestants, asthma meds - stimulant and anxiety effects
- Cardiac Medications confusion, psychosis, mood changes, sedation
- Pain Control sedation, mood changes
- Diabetes anxiety, agitation, mood changes - esp. if not working

# Medications for Medical Conditions

- Sleep aids confusion, sedation
- Corticosteroids anxiety, confusion, mood changes, psychosis
- Anabolic Steroids anxiety, mood changes, psychosis



# QUESTIONS?